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Department of the Interior
Minerals Management Service
381 Elden Street, MS-4042
Herndon, Virginia 20164

Re: Comments on the Notice of Intent to Prepare an EIS on the Cape Wind Project

I have been studying the issues involved with offshore wind power for more than four years. As part of this work I attended many Army COE hearings on the Cape Wind project and provided many comment letters. From the beginning, I urged that a thorough study and careful decision be made on which areas of the ocean are acceptable to our nation for wind farms. The European experience provides an excellent background for this work.

My comments on the scope of the pending EIS for the proposed Cape Wind project follow. Full details are beyond the scope of this comment letter. The COE DEIS for the Cape Wind project should be used to scope the issues that must be considered in the MMS EIS and the types of analyses that must be performed. Every issue addressed in the COE DEIS should be updated and included in the MMS EIS.

1. Issues To Be Addressed

Many of these issues were addressed in the COE DEIS but not adequately analyzed.

HUMAN FACTORS and MARINE LIFE

- Noise – What noise will be generated by the equipment (in new condition and in degraded condition) and by fog horns? What noise will be heard on land and by boaters under various wind conditions? What impact will the noise and equipment vibration have on marine life?
- Lights – What light levels will be generated by the equipment lights under various conditions of cloud cover and fog density. What light will be seen on land and by boaters at different locations inside and outside the project? What impact will the light have on the night sky and on star visibility? What impact will the lights have on marine life?
- Safety - What are the potential dangers of boating near the equipment? How will wind turbine blade breakage and flinging of ice and dead birds through the air be avoided? In Europe the public has been warned to stay out of some wind farms due to safety considerations.
- Wake – Wind farm designers are concerned about the effects of a WTG wake on other WTGs. What is the effect of WTG wake inside the wind farm on sail boats?
- Artificial Reef – It is claimed that the wind farm will generate an artificial reef environment. What species will be attracted to these reefs and what species will be repelled? Some artificial reefs have encouraged large populations of jellyfish. Jellyfish thrive on shellfish larvae. What will be the impact on Horseshoe Shoal and nearby Nantucket Island shellfish (especially scallops)? This summer has also seen a large number of dangerous jellyfish on nearby south Cape Cod beaches.

POLLUTION

- What are the risks of ocean contamination by oil, grease or other contaminants during construction, operation and decommissioning of the project? The risk analysis should include the risks of transporting the equipment to the project site.
- What equipment failures would cause contamination of the ocean by oil, grease or other contaminants?"
- Equipment certification should be required to insure that installed equipment has a minimum risk to the environment (as discussed under Certification).
- A massive amount of heat is dissipated in the transmission cables, equipment and by the turbine blades¹. Up to 10% of the generated electricity can be dissipated in transmission² and up to 30% by the turbine blades (turbulent mixing, viscous shear). The effects of this heat energy (on ocean bottom, ocean water, air) must be addressed in the EIS.

CERTIFICATION

It is essential that any equipment installed in the ocean be designed, manufactured, installed and maintained to insure that people and the environment are protected. Many European countries have adopted very thorough certification requirements for wind turbine generators. A certificate must be issued by a government agency or wind turbine certifying institute, e.g. CIWI – Holland, Germanischer Lloyd - Germany. The requirements involve design verification, acceptable manufacturer's quality control, and system testing. System testing frequently involves measurements on the actual WTG to confirm design calculations (re: Vibration, static and fatigue strengths, etc.). Installation and maintenance standards have also been adopted and are requirements for offshore projects.

U.S. certification standards for offshore WTGs must be developed and the EIS must place requirements to follow the standards. A certification standard for equipment to be installed in offshore U.S. waters should be established, and an approved agency should be available to certify proposed equipment. Included should be a requirement for lengthy testing of the actual equipment proposed. Accelerated life tests and failure analyses should be performed to identify what types of failures could be expected. Standards should also be adopted for installation and maintenance.

CABLING and TRENCHING

Trenches must be given thorough study as to the impact (present and future) on shellfish and other marine life. The impact on commercial and recreational shellfishing activities must be determined and techniques designed to minimize the impact.

There have been numerous problems with the installation of undersea cables. Recently the Long Island Cross Sound cable experienced installation problems, and final approval was held up due to the fact that the trench was not at the required 6 foot depth in portions of New Haven harbor. Installation of all cables needs to be closely inspected by government agencies during trenching to assure that all depth requirements are met.

There were also problems with another Army COE project involving ocean trenching. It was found that an undersea gas line in Massachusetts Bay was improperly installed and needed repairs in eight locations because of the potential damage due to ships' anchors. Open trenches and piles of spoils 200 to 1,000 feet long were discovered. The line was improperly buried in 21 places, but repairs at 13 locations were forgone due to the risk of further damage to marine life.

¹ "Heat Generation by a Wind Turbine" G.P. Corten 14th IEA Symposium Dec 4-5, 2000, NREL

² "Transmission Options For Offshore Wind Farms In The United States" James F. Manwell, et al, AWEA 2002 Conference

It seems that improper undersea trenching has been commonplace. Permitting and authorizing agencies should take steps to insure that undersea cables are properly installed, with a minimum of damage to marine life. Final permit for a project should include approval of a plan which includes:

- Details of the procedure and equipment for trenching and laying the cables,
- Details of the method to be used to verify that the work is accomplished properly (proper cable depth, spoil handling, shellfish monitoring and spoil cleanup),
- Details of how government officials can monitor the installation and verification,
- Details of how government officials can halt installation if improper work is in process,
- Details on how and when the contractor will repair, correct and remedy improper work,
- Appropriate penalties for deviations to the plan.

SERVICE PLATFORM ISSUES

The proposed Cape Wind Service Platform (SP) creates a multiplicity of problems which need to be addressed in the EIS.

- People may be working/living on the Service Platform 24 hours a day, year round.
- Large quantities of fuel may be stored on the SP. It may also house transformers and other electrical equipment carrying hundreds of megawatts of electrical power. Explosions and fires in such wind farm equipment have been documented.
- The USCG may be expected to provide for the safety of the people on the SP and working on the wind turbines.
- The USCG may be expected to fight explosions and fires on the SP or on the wind turbines.
- The water depth at all equipment must allow vessel access for fire fighting and other rescue purposes.
- Would the USCG need additional vessels or equipment if a project is approved?
- Would the USCG need a new facility near the project?
- USCG personnel may require special training to support a project.
- How is the project going to be protected from Homeland Security attacks, considering the vulnerability of ocean locations?

These issues must all be addressed in the EIS.

INSURANCE POLICIES AND SURETY BONDS

Appropriate insurance policies and surety bonds should be required on the Cape Wind project. These should reimburse the government for any costs incurred in supporting the project. They should also be written to insure removal of equipment and cabling (if deemed necessary) during the construction phase, operational phase or end-of-life. The MMS should be the body that determines the need for removal and the procedures involved.

The financial viability of the insuring and bonding companies must be appropriate to the project, considering that some projects may involve more the one billion dollars of investment. Continual monitoring of the policies and bonds is needed because the end-of-life removal may be in excess of 20 years from project start.

European experience has shown that the availability of such sureties may depend on proper equipment certification (as discussed under Certification).

2. Alternatives to be Addressed

NUCLEAR

- Congress and the President are encouraging the expansion of nuclear power, and plans are underway for new nuclear power plants. The nuclear power alternative to the Cape Wind project must be evaluated in the EIS.

SITE SELECTION CRITERIA

- The COE DEIS Preliminary Site Screening Criteria did not reflect the European Peer Committee³ concerns and statements that the project does not need to be greater than 200 MW in size. The recommendation that multiple small land-based projects be considered was also ignored.
- The COE DEIS Criteria for offshore water depths less than 50 feet MLW with extreme storm wave (ESW) heights of less than 20 feet are too restrictive. The Peer Committee stated in 2003 that "70 feet seems to be the current depth limit at which projects can still be installed on an economic basis and this is even being exceeded by the depths of some projects recently awarded in the United Kingdom." The Butendiek North Sea wind farm has 65 foot water depth and 35 foot ESW.
The Long Island Power Authority wind farm uses 70 foot water depth criteria and will experience ESW heights in excess of 30 feet.
Monopole foundations are now feasible in more than 110 foot water depth.

- **Alternative Site Locations**

The MMS EIS should consider other locations based on an up-to-date Criteria, as discussed above. It is clear that locations south of Martha's Vineyard and Nantucket Island have far fewer environmental and safety problems than Nantucket Sound sites.

One alternative location that should be considered is the COE DEIS South of Martha's Vineyard site (SMV). The site was found to have many favorable characteristics (3.4.2.2.2) and the Summary (3.4.2.2.1) states that this area "warranted a closer look". The site was then summarily dismissed because of "concerns regarding the potential for unexploded ordinance in the area to the south of Martha's Vineyard". The site was replaced by the south of Tuckernuck Island site (STI). It was stated that the STI site "has similar ocean conditions without the additional concerns". Other sections of the DEIS contradict this "similarity". The Extreme Storm Wave height (ESW) at STI is 52.5 feet (Table 3-13) whereas the SMV ESW is only 28 feet (Section 3.4.2.2.2). The ESW at STI put the site at a disadvantage to Horseshoe Shoal, and the South of Martha's Vineyard site should not have been eliminated from final consideration.

The "additional concerns" about the SMV site were concerns about seals and unexploded ordinance near Nomans Land. The unexploded ordinance is in a very restricted area around the island of Nomans Land and is never a problem to vessels to/from the west. The nearest point of the suspected ordinance is 6.6 miles away from the SMV wind farm boundary shown in DEIS Figure 3-12. Wind farm vessels traveling to the wind farm from Providence or New Bedford would need to lengthen their voyage by a very small amount to very safely avoid the ordinance area. The distance to the SMV site would still be very significantly less than to Horseshoe Shoal.

The SMV wind farm ellipse in Figure 3-12 is much greater than the 25 square miles needed for the wind farm. This ellipse was clearly never seriously considered as a location for the wind farm because a portion of the wind farm would be within the Mass. 3-mile limit. A 25

³ COE DEIS Appendix 3-E Peer Review Committee "Technical Review of Preliminary Screening Criteria for the Cape Wind EIS; Consolidated Comments" Sept. 30, 2003

square mile area south of Martha's Vineyard between Lo 70° 32' W and 70° 39' W and totally outside the 3-mile limit would involve water depths less than 85 feet. This location would also be well away from Muskeget Channel. The distance to navigation and shipping channels would be much greater than the distance from the Horseshoe Shoal wind farm to major shipping channels.

3. Mitigation Measures

FISHERIES

Nantucket Sound, including Horseshoe Shoal, is an extremely productive fish, squid⁴ and shellfish area. There should be no tradeoffs or fair return arguments when it comes this ocean fishery. The area is important as a food supply for our nation and to our economy for major exports.

European nations have made it a policy to avoid construction in ocean fisheries. The U.S. should also prohibit development in and around existing and prospective ocean fishing areas, including Nantucket Sound.

[Wind farm proponents state that there is no proof that wind farms have disrupted European fishing. The reason is that Europeans have avoided construction in significant fishing areas.]

PUBLIC SAFETY

Public safety is another issue that should not be compromised by wind farms or open to mitigation. Wind farms should not be built within 1 mile of passenger ferry or shipping lanes. European countries generally abide by such a rule. The Long Island Power project uses a minimum ½ mile criteria.

The proposed Nantucket Sound wind farm would locate some wind turbine generators directly adjacent to a passenger ferry and shipping lane. Last winter a Nantucket passenger ferry drifted helplessly for about 2 hours in a region near the proposed wind farm. Such situations could be disastrous to ferries and passengers.

The safety of low-flying aircraft in the vicinity of wind farms is vital. Wind farms should not be built on major routes of such airplanes. The proposed Nantucket Sound wind farm is on the flight path of commuter airplanes from Hyannis to Nantucket. Recently there have been several small aircraft that have left Hyannis and completely lost power. They drifted helplessly until they went into the ocean. Losing airplane power over a wind farm would be a disaster.

I hope that the Minerals Management Service will seriously consider all of these comments in the Cape Wind EIS.

Original signed by

Kenneth H. Molloy, P.E.

⁴ Nantucket Sound is the nation's most productive squid fishery.